

Background material for presentation on AFSC Ecosystem Science overview and priority setting

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Goals, objectives, prioritization and strategy (TOR 1)

The overall strategic plan for the Alaska Fisheries Science Center (AFSC) is described by the [AFSC Science Plan](#), which was published in 2010. The plan has been updated in 2016 but has not been finalized. The three research themes of the updated plan are: 1) monitor and assess fish, crab, and marine mammal populations, fisheries, marine ecosystems, and the associated communities that rely on these resources; 2) understand and forecast effects of climate change on marine ecosystems; and 3) achieve organizational excellence in our administrative activities through innovation and the use of best practices.

A [guidance memo](#) is published annually to focus on the coming year's programmatic priorities with the fiscal outlook. This memo identifies funding priorities for the coming year after consultation with NOAA Fisheries Headquarters and the Alaska Regional Office. These priorities are used for funding decisions on AFSC research, including ecosystem science.

Research plans often are written to guide research in ecosystem and habitat science and include subject-specific research priorities. Teams of AFSC and [PMEL](#) scientists and Alaska Regional Office staff plan and collaborate in writing these research plans. For example, current research plans include the Recruitment Processes Alliance White Paper, the [Essential Fish Habitat Research Plan](#), the [Loss of Sea Ice Research Plan](#), and the [Alaska Ocean Acidification Research Plan](#).

Ecosystem-related science integration (TOR 1)

Ecosystem science brings scientists from multiple AFSC programs together through interdisciplinary teams that tackle specific research areas. The Recruitment Processes Alliance focuses on understanding climate effects on recruitment processes and encompasses 7 AFSC and PMEL programs. The [Habitat and Ecological Processes Research Program](#) focuses on integrated studies that combine scientific capabilities and create comprehensive research on habitat and ecological processes and is responsible for four research areas of Loss of Sea Ice, Essential Fish Habitat, Ocean Acidification, and the Bering Sea Project as well as facilitating other cross-Division research such as the Recruitment Processes Research.

Climate science strategy (TOR 3)

NOAA Fisheries released a [draft Regional Action Plan for Southeastern Bering Sea Climate Science](#) to help address key climate-related information needs in this Region as called for in the

NOAA Fisheries Climate Science Strategy. The draft Regional Action Plan identifies key information needs and actions that NOAA Fisheries and partners will take in this Region over the next 3-5 years to implement the NOAA Fisheries Climate Science Strategy, released in August of 2015. The draft Regional Action Plan also includes a plan to assess the vulnerability of 18 commercially important fish species to climate change and a science action plan detailing ongoing steps to monitor climate change impacts on these species and studies of ecological processes to understand these impacts. The climate vulnerability assessment we are conducting as part of this Regional Action Plan will enable us to provide data and information to help fishery managers make informed decisions to ensure the sustainability of commercially important U.S. fish stocks. Another key aspect of this work is the a comprehensive, multi-disciplinary modelling approach to project abundance estimates for key fish stocks in the Bering Sea under various climate conditions. [Click here](#) to read more about this 3-year project.

The modeling approach depends on understanding provided by past and current research on recruitment processes and fisheries oceanography by NOAA Fisheries. For example, our climate science approach has provided understanding of why southeastern Bering Sea pollock biomass dropped and then recovered. We found that due to bloom timing, large crustacean zooplankton benefit from icy winters, providing prey for age-0 pollock to enter their first winter fat, thus increasing overwinter survival and subsequent recruitment to the fishery. [Click here](#) to learn more about our climate science approach.

We currently are receiving [public comment](#) on the draft Regional Action Plan. We expect to conduct the vulnerability assessment over the next several months and finalize the Regional Action Plan by October.